

LOW VOLTAGE POWER SUPPLY MONITORING SYSTEM –ALARMS PROCEDURE

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ABSTRACT

This note is designed to be a reference guide for users in the CDF control room in the event of an alarm caused by the Low Voltage Power Supply Monitoring System. No background knowledge of the Low Voltage Monitoring System is required to follow the steps provided by this note.

PSM System is Alarming

An alarm appearing on the main Slow Control window (Fig. 1) in the CDF control room means that at least one Power Supply Monitor (PSM) channel—e.g. voltage, temperature, fan, etc.—is out of specifications. The following is a list of steps that one should take in the event that the Power Supply Monitoring system is alarming. Be aware that it takes approximately two minutes for the system to read all of the voltages and then update the iFIX database. Therefore even after curing the problematic power supply the alarm persists until the iFIX database has been updated.

STEP 1—Find the power supply which caused the alarm

In the Global Alarms page of the Slow Control 2 monitor in the CDF control room, click on the box small icon labeled “D” right to the PSM box to go to the main PSM Control Page (Fig. 2) and note which group of power supplies is alarming and what the color is on the alarming unit. Clicking on the alarming group leads to the page reporting the status of the given group of power supplies (e.g. end-wall power supplies, Fig. 3). In all of the display windows, the color of power supply channel—and subsequently the entire power supply—denotes its status. The following is a summary of the colors one should know.

Green Readings are within specifications.

Red Alarm is set ON. Voltage or other readings are out of specifications.

Orange Signal has been masked.

Purple Communication Error. Readout defaults to 30 for all channels.

STEP 2—Determine why the power supply has caused the alarm

Click on the alarmed unit to open a window with detailed information about the power supply. Next, click the button corresponding to the alarmed power supply. In this window (Fig. 4), channel information for the power supply is displayed next to the expected value for that channel. If a power supply channel turns PURPLE or RED, then an alarm will be set. There could be several reasons why a power supply has set an alarm:

Channel is Purple

This indicates a communication error. The display will default to values of 30 for all of the data in this case. Wait for a data reading cycle (2-3 minutes) and the problem may correct itself. If it does not correct itself proceed to STEP 3.

Channel is Red

This indicates that a power supply monitoring channel is out of specifications. Some common reasons for this are: 1. Someone has turned off the power supply (most likely in order to work on it); 2. The power supply has been tripped and subsequently shut down; 3. The PSM is having software difficulties and is giving an erroneous reading.

In order to determine the actual cause of an alarm, do the following:

1. If the power supply causing an alarm is accessible, go to the physical location of the supply to see if the power has been shut down or tripped.
2. If you cannot ascertain the source of the difficulty at the actual unit, proceed to **STEP 3**.

STEP 3–Seek Help

There are different people in charge of the hardware for each power supply unit. If you cannot judge how to solve the type of problem you are facing, find the name for that person responsible for the alarming power supply by clicking on the alarmed unit (Fig. 4). Contact that person and describe the difficulty you are having. You will be instructed how to proceed, and may be asked to “mask” the alarm.

Masking an Alarm

In order to keep an alarm caused by a malfunctioning power supply from detracting the monitoring efficiency of all of the power supplies, it has been made possible to silence an alarming unit. By clicking the small black box next to the corresponding unit so that it is empty (Fig. 3), it becomes impossible for that power supply to set an alarm. This silencing effect is known as “masking” a power supply. This is especially convenient in the event that someone has to turn off a power supply to work on it or replace it. Turning off a power supply results in an alarm for that unit and subsequently will turn the alarm ON for the PSM in the Global Alarms window on the Slow Control display.

It is important to note that the mask-boxes do NOT describe the state of a power supply. The state of a power supply is denoted by its color. This means it is possible for a power supply to be masked but to have its mask-box empty. When unmasking a unit, i.e. clicking an empty box to make it black, the color will often not change on the power supply picture until the voltman program reads that particular power supply (about 2-3 minutes). However, masking or unmasking a power supply when the window indicates “Ready” or “Working” will drastically shorten this waiting time to about a second.

Heart Beat Alarm - Rebooting the VOLTMAN PC

Heart Beat Alarm (a small purple icon on the Global Alarms Screen, Fig. 1) means that the power supply program running on the VOLTMAN PC (third floor, behind the Level 3 Trigger PC farm) is no longer writing a time stamp into the iFIX data base. If the problem persists it is necessary to check whether the PC is hanging and to reboot it if necessary. After restarting the computer, logon as a "cdf-voltman" user. The password may be obtained from an on-call expert. After logging on, the program volt.exe starts automatically (this takes few minutes to load). When the program opens, click the RUN button on the program window. If everything is going correctly after a couple of minutes the power supply boxes on the program window should start changing colors.

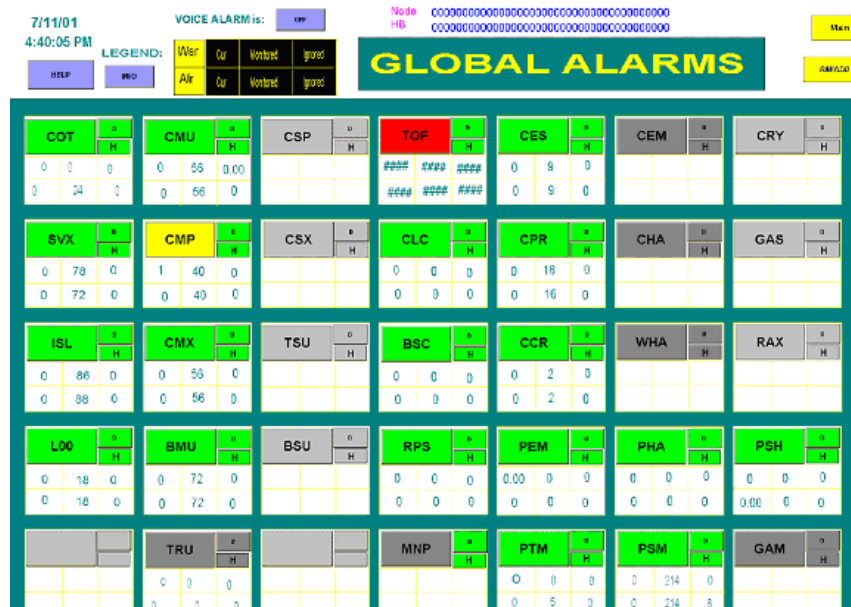


Figure 1: The Global Alarms window as seen from "Slow Control" screen in the Control Room. Clicking on the "D" icon right from the PSM box pops up a new window with the main PSMON control screen.

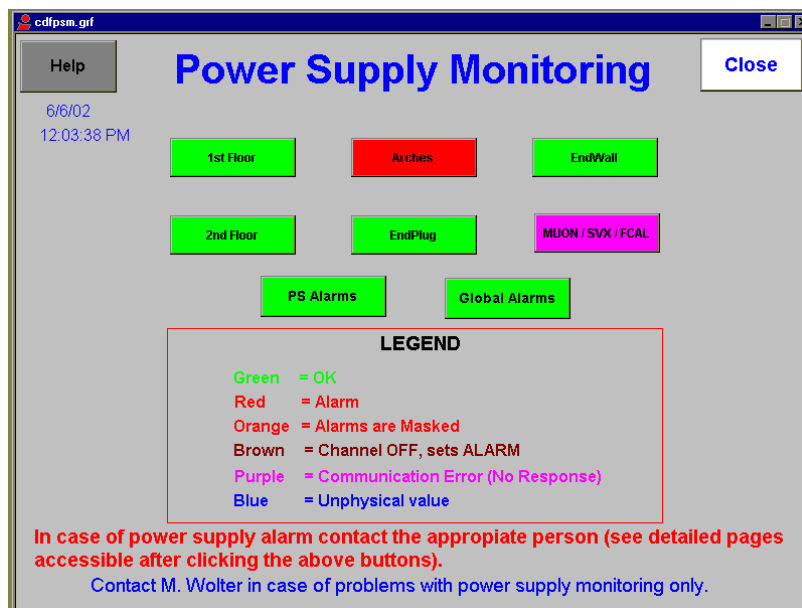


Figure 2: The main PSMON control screen. Clicking on the icon pops out the control panel for the desired section of power supplies (eg. first/second floor, central arch, etc).

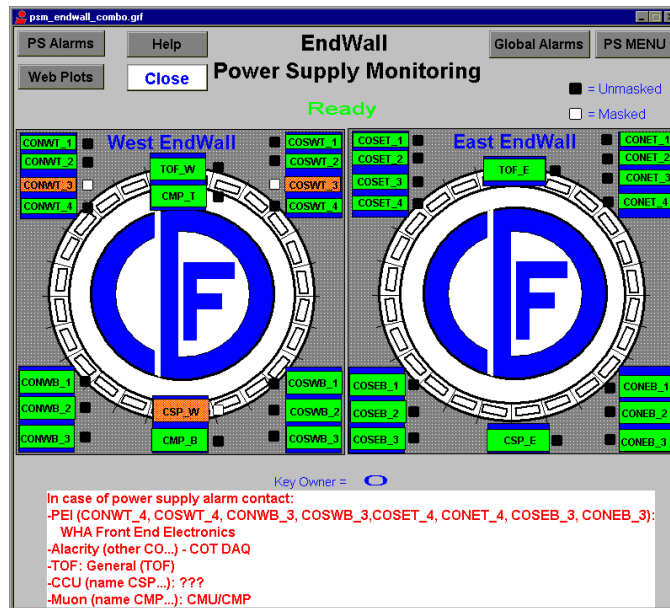


Figure 3: The PSMON screen displaying the status of the Ens-Wall power supplies. Clicking on the icon pops out a screen displaying the status of the desired power supply. By clicking the black mask-boxes close to the PS icons, the PS alarms can be masked (power supply boxes turn orange).

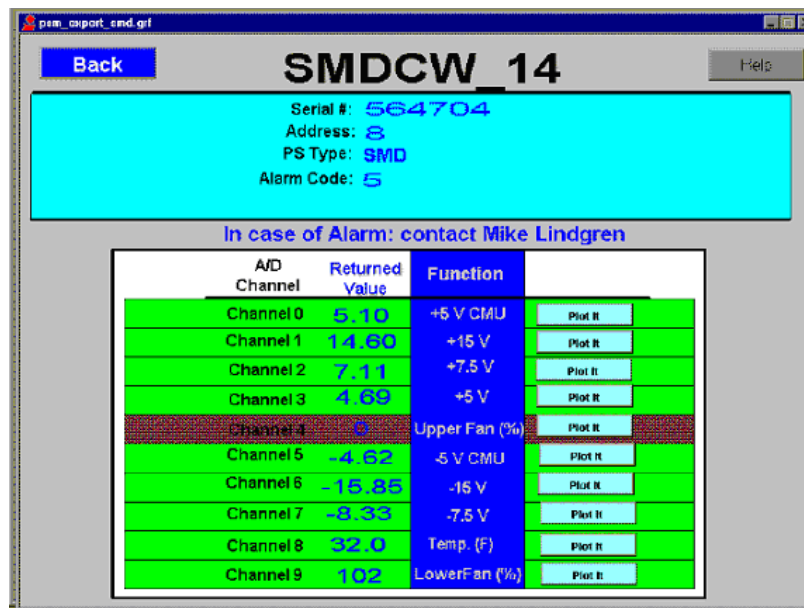


Figure 4: An example of the channel information for PS unit SMDCW_14. Channel 4 reads a value of "0", which is out of specifications for this power supply. Thus channel 4 is RED.